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May 16, 2000

Mr. Dennis Marroni
Director, Product Information & Regulatory Affairs
SNF, S.A.
41 Rue Jean-Huss
42028 Saint-Etienne Cedex
1. France

Re: Acrylamide Grout Industrial Hygiene Monitoring Project

Dear Mr. Marroni:

Attached please find my summary of the results of acrylamide grout industrial hygiene monitoring recently performed on behalf of SNF, SA, pursuant to the agreement between Virginia Commonwealth University and SNF, SA. The purpose of the monitoring study was to determine worker acrylamide exposure levels when aqueous solutions of the monomer, rather than bagged solid acrylamide, are used in grouting operations.

A Maryland company, TRB Specialty Rehabilitation, Gambrills, Md., performed the grouting work. TRB was experienced with acrylamide grouting, having used solid acrylamide in the past. This was, I understand, TRB's first experience using aqueous acrylamide solution

Monitoring was performed on Tuesday, May 2, 2000, by me personally, with the assistance of Mr. Steve Henning and Dr. Marvin Friedman. TRB had three employees present and performing grouting: Mr. Rob Hilton, the crew leader, Mr. John Brady, and Mr. Chucky Hood. The grouting project was performed in storm water sewer lines, Hillmeade Subdivision, Prince Georges County, Maryland.

The protocol used was modeled after that employed by USEPA in its document entitled "Assessment of Airborne Exposure and Dermal Contact to Acrylamide During Chemical Grouting Operations, EPA 560/5-67-009, July, 1987. As EPA did in 1987, we collected four kinds of acrylamide samples: personal air monitoring samples collected in the breathing zone of the employees, dermal exposure samples collected on the bare skin or the protective clothing of each employee, handwash samples at the end of the work shift for each employee, and wipe samples from the equipment used during grouting operations. Thirty-six samples were collected and submitted for analysis.

Our original working hypothesis was that exposure levels encountered by workers using aqueous solutions of acrylamide during grouting would be lower than those

resulting from pouring solid phase acrylamide from bags when performing this work. The preliminary data support this proposition. Exposures to airborne acrylamide were below the limits of detection for all employees. Most dermal exposures were also below the limits of detection of the method. Handwash exposures were generally lower than those collected by EPA.

Of course, the data we have collected are representative of six hours of work on a single day by three employees. EPA collected data from three separate grouting activities: mainline sewer rehabilitation, work in sewer laterals, and work in manholes. Moreover, EPA collected data from four separate sites. It may be appropriate to collect additional data to test the hypothesis further.

The original Schneider Laboratory report sheets are attached. Please let me know if you have any questions or if the University can be of further service to SNF.

Respectfully submitted,

R Vance

R. Leonard Vance, Ph.D., PE, CIH
Associate Professor

ACRYLAMIDE SAMPLING RESULTS

May 16, 2000

Report prepared by: R. Leonard Vance, Ph.D., PE, CIH; Associate Professor

The tables below set forth the results reported from acrylamide sampling performed by Virginia Commonwealth University on May 2, 2000, in Prince Georges County, Md. The samples were submitted to Schneider Laboratory, Inc., Richmond, Va., for analysis on May 3, 2000.

ACRYLAMIDE WIPE SAMPLES

Wipe Samples - location	Sample number	Analysis Result (mg)
truck dashboard	W-DB	< 0.04
exterior, acrylamide tank	W-AcT	0.054
TV/VCR monitor table	W-MT	< 0.04
steering wheel-truck	W-SW	< 0.04
remote control console	W-RCC	< 0.04
hydraulic hose	W-HH	< 0.04
BA [blank]	W-BA	0.042
duct tape extraction	DT	< 0.04
safety cone in road	W-SC	< 0.04

HANDWASH SAMPLES**

Employee / hand	sample number	Results**
Chucky Hood / left	H-C-L	
Chucky Hood / right	H-C-R	
John Brady / left	H-B-L	
John Brady / right	H-B-R	

* note - sample unavailable from Rob Hilton; ** unavailable as of 5/13/00

AIR SAMPLES [silica gel sorbent tubes plus cassettes]; flow rate: 0.5 /liters/minute

Employee sampled	time sampled	sample no. Cassette*	sample no. Silica gel	Total (mg) acrylamide	8 hr TWA (ppm)
C. Hood	9:00 am-3:30 pm	A-C-1-Tu	A-C-1-Tu sg	< 0.02	<0.029
J. Brady	9:30 am-3:30 pm	A-B-1-Tu	A-B-1-Tu sg	< 0.02	<0.029
R. Hilton	9:35 am-3:30 pm	A-H-1-Tu	A-H-1-Tu sg	< 0.02	<0.029
air blanks	blank	blank	blank	< 0.02	

DERMAL PADS

employee	location	sample number	Total Acrylamide (mg)
Rob Hilton	back	no sample	
Rob Hilton	right shoulder	no sample	
Rob Hilton	left shoulder	D-H-LS-Tu	< 0.100
Rob Hilton	rt knee	D-H-RK-Tu	< 0.100
Rob Hilton	left knee	D-H-LK-Tu	0.325
Rob Hilton	right forearm	D-H-RA-Tu	0.390
Rob Hilton	left forearm	D-H-LA-Tu	< 0.100
blank	blank	blank	< 0.100
Chucky Hood	back	D-C-B-Tu	< 0.100
Chucky Hood	right shoulder	D-C-RS-Tu	< 0.100
Chucky Hood	left shoulder	D-C-LS-Tu	< 0.100
Chucky Hood	rt knee	D-C-RK-Tu	< 0.100
Chucky Hood	left knee	D-C-LK-Tu	< 0.100
Chucky Hood	right forearm	D-C-RA-Tu	< 0.100
Chucky Hood	left forearm	D-C-LA-Tu	< 0.100
John Brady	back	D-B-B-Tu	0.125
John Brady	right shoulder	D-B-RS-Tu	< 0.100
John Brady	left shoulder	D-B-LS-Tu	< 0.100
John Brady	rt knee	no sample	
John Brady	left knee	D-B-LK-Tu	< 0.100
John Brady	right forearm	D-B-RA-Tu	0.295
John Brady	left forearm	D-B-LA-Tu	< 0.100

note: samples chilled until delivery to lab.

HANDWASH SAMPLES [hand rinses in 75 ml deionized water]

Employee / hand	sample number	Concentration ** Acrylamide (μg/ml)	Total acrylamide on hands (μg in 75ml)
Chucky Hood / left	H-C-L	1.71	128
Chucky Hood / right	H-C-R	2.32	167
John Brady / left	H-B-L	1.59	119
John Brady / right	H-B-R	2.48	186

* note - sample unavailable from Rob Hilton

** detection limit: 1.08 (μg/ml)